


JC10 Rec'd PCT/PTO 24 JAN 2002

FORM PTO-1390 (REV. 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER 31229-177731
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371			U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/031745
INTERNATIONAL APPLICATION NO. PCT/GB00/02608	INTERNATIONAL FILING DATE July 7, 2000	PRIORITY DATE CLAIMED July 24, 1999	
TITLE OF INVENTION AN INTEGRAL BATTERY AND RECHARGER			
APPLICANT(S) FOR DO/EO/US Bryan INSLEY			
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:			
<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)). <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> has been communicated by the International Bureau. (attach form IB 308) c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). <ol style="list-style-type: none"> a. <input type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4) 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)). <ol style="list-style-type: none"> a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). 			
Items 11 to 20 below concern document(s) or information included:			
<ol style="list-style-type: none"> 11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. 14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 15. <input type="checkbox"/> A substitute specification. 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 20. <input type="checkbox"/> Other items or information: 			
20a. <input checked="" type="checkbox"/> For purposes of examination, please insert the annexes to the IPER, so that the application will comprise the following pages of the English translation:			
Specification: Original pages		Amended pages	
Claims: Original claims		Amended claims 1-15.	

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10/031745

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO.		ATTORNEY'S DOCKET NUMBER 31229-177731	
21. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO..... \$1040.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO..... \$890.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO..... \$740.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4)..... \$710.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)..... \$100.00 <div style="text-align: right;">ENTER APPROPRIATE BASIC FEE AMOUNT =</div>				CALCULATIONS PTO USE ONLY	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 445.00	
				\$ 65.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	
Total claims	- 20 =	0	x \$18.00	\$	
Independent claims	- 3 =	0	x \$84.00	\$	
MULTIPLE DEPENDENT CLAIMS(S) (if applicable)			+ \$280.00	\$	
TOTAL OF ABOVE CALCULATIONS =				\$ 510.00	
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$ 510.00	
SUBTOTAL =				\$ 510.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
TOTAL NATIONAL FEE =				\$ 510.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$	
TOTAL FEES ENCLOSED =				\$510.00	
				Amount to be refunded:	\$
				Charged:	\$
a. <input checked="" type="checkbox"/> A check in the amount of \$ <u>510.00</u> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>22-0261</u> . A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038. NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO: VENABLE P.O. Box 34385 Washington D.C. 20043-9998 Phone No. 202-962-4800 Fax No. 202-962-8300					
				 SIGNATURE	
				Michael A. Sartori, Ph.D. NAME 41,289 REGISTRATION NUMBER	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Bryan INSLEY

Int'l Appl. No.: PCT/GB00/02608

Int'l Filed: July 7, 2000

For: AN INTEGRAL BATTERY AND
RECHARGER

Art Unit: NOT YET ASSIGNED

Examiner: NOT YET ASSIGNED

Atty. Docket No.: 31229-177731

Customer No.



26694

PATENT TRADEMARK OFFICE

Preliminary Amendment

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to calculation of the fees, please amend the specification and the claims, as amended
by the IPER, as follows:

IN THE SPECIFICATION:

Please insert the following paragraph at page 11, line 18:

--United Kingdom Patent Application No. 9917337.9, filed July 24, 1999, and International
Application No. PCT/GB00/02608, filed July 7, 2000, are incorporated herein by reference.--

IN THE CLAIMS:

Please cancel claims 14 and 15.

Bryan INSLEY
PCT/GB00/02608
Page 2

Please amend claims 4-12 as follows:

4. (Amended) An integral battery and recharger according to claim 1, wherein the ends of the pins provide two point stabilising contact, in use, with the cavity.

5. (Amended) An integral battery and recharger according to claim 1, wherein the plug pins project outwardly from a side of the housing.

6. (Amended) An integral battery and recharger according to claim 1, wherein the plug pins are fixed in the same position with respect to the housing during recharging and during use of the battery in a battery powered device.

7. (Amended) An integral battery and recharger according to claim 1, wherein the cavity has a rectangular cross-section with bevelled angles.

8. (Amended) An integral battery and recharger according to claim 1, wherein the plug pins project outwardly perpendicular from the cavity spaced face of the housing.

9. (Amended) An integral battery and recharger according to claim 1, wherein the positive and negative pins abut, in use, adjacent sides of the cavity respectively to thereby provide additional rotational and lateral stability for the battery within the cavity.

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10. (Amended) An integral battery and recharger according to claim 1, wherein two adjacent sides of the battery housing extend substantially at right angles to each other.

11. (Amended) An integral battery and recharger according to claim 1, wherein the side from which the pins project extends at substantially 45° with respect to the said adjacent sides to form the third side of a three sided battery housing.

12.(Amended) A battery powered device comprising a battery cavity for receiving a battery housing and a battery located in the said cavity, the battery being according to claim 1.

REMARKS

This Preliminary Amendment is made to eliminate multiple claim dependency and to correct the dependency of claims 7 and 11. Further, the specification has been editorially amended. Examination on the merits of the application is requested. A marked-up version showing the changes made to the claims is attached.

Date: January 24, 2002

Respectfully submitted,



Michael A. Sartori, Ph.D.

Registration No. 41,289

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MAS/trl
DC2-346783

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claims 4-12 are amended as follows:

4. (Amended) An integral battery and recharger according to [any preceding] claim 1, wherein the ends of the pins provide two point stabilising contact, in use, with the cavity.

5. (Amended) An integral battery and recharger according to [any preceding] claim 1, wherein the plug pins project outwardly from a side of the housing.

6. (Amended) An integral battery and recharger according to [any preceding] claim 1, wherein the plug pins are fixed in the same position with respect to the housing during recharging and during use of the battery in a battery powered device.

7. (Amended) An integral battery and recharger according to claim [7] 1, wherein the cavity has a rectangular cross-section with bevelled angles.

8. (Amended) An integral battery and recharger according to [any preceding] claim 1, wherein the plug pins project outwardly perpendicular from the cavity spaced face of the housing.

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9. (Amended) An integral battery and recharger according to [any preceding] claim 1, wherein the positive and negative pins abut, in use, adjacent sides of the cavity respectively to thereby provide additional rotational and lateral stability for the battery within the cavity.

10. (Amended) An integral battery and recharger according to [any preceding] claim 1, wherein two adjacent sides of the battery housing extend substantially at right angles to each other.

11. (Amended) An integral battery and recharger according to claim [12] 1, wherein the side from which the pins project extends at substantially 45° with respect to the said adjacent sides to form the third side of a three sided battery housing.

12. (Amended) A battery powered device comprising a battery cavity for receiving a battery housing and a battery located in the said cavity, the battery being according to [any of claims 1-13] claim 1.



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PCT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Bryan INSLEY

Appl. No.: 10/031,745

Filed: January 24, 2002

For: AN INTEGRAL BATTERY AND
RECHARGER

Art Unit: NOT YET ASSIGNED

Examiner: NOT YET ASSIGNED

Atty. Docket No. 31229-177731

Customer No.



26694

PATENT TRADEMARK OFFICE

Request For Approval For Drawings Changes

Assistant Commissioner for Patents
Washington, D.C. 20231

Attention: Draftsman

Sir:

Applicant requests approval of the added drawing of Figure 6 on the attached single sheet.

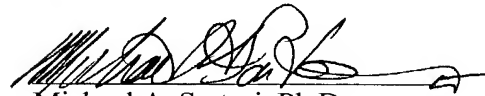
With the Preliminary Amendment concurrently filed with the application on January 24, 2002, the application was amended by reciting that United Kingdom Patent Application No. 9917337.9 filed July 24, 1999 was incorporated by reference into the application. The attached Figure 6 was filed with the priority United Kingdom patent application but was omitted from the publication of the international application, International Publication No. WO 01/08249. Hence, Figure 6 is not new matter.

Bryan INSLEY
Appl. No.10/031,745
Page 2

Approval of the draftsperson and the Examiner is respectfully requested.

Respectfully submitted,

Date: February 26, 2002



Michael A. Sartori, Ph.D.

Registration No. 41,289

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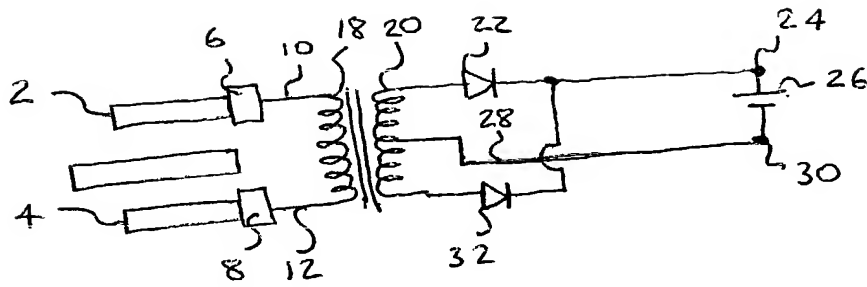
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MAS/trl/rahs
DC2DOCS1/354063

Figure 6



4/p1b

10031745 10/031745

JG13 Rec'd PCT/PTO 24 JAN 2002
PCT/GB00/02608AN INTEGRAL BATTERY AND RECHARGER

The present invention relates to an integral battery and recharger device.

5

Rechargeable battery devices are well known for two prong plug sockets used in many countries. For instance, US 4,086,523 describes a rechargeable battery device including a storage cell, a housing enclosing the storage cell, a
10 rectifier in the housing and a pair of output terminals exposed for delivering electrical energy from the storage cell. The battery is provided with a pair of prongs arranged for electrical connection to a female power supply receptacle. The prongs are pivotally mounted at opposite
15 sides of one of the terminals to extend selectively in a first disposition straddling one end of the housing, and a second disposition projecting from that one end in a parallel spaced relationship to be received in the female power receptacle. The electrical circuit of the
20 rechargeable battery includes a switch for electrically connecting the prongs to the rectifier and storage cell to permit recharging of the storage cell from the female power supply receptacle only when the prongs are disposed in the extended disposition. The prongs may be biased both to the
25 retracted disposition and the extended disposition, and at least one of the contacts may be a spring contact for effectively maintaining electrical connection between the prongs and the charging circuitry. One of the contacts of the switches may be defined by a portion of the prongs.
30 Similarly, US 5,449,567 describes a rechargeable battery including a hollow battery housing having a top end

provided with a positive battery terminal, a bottom end provided with a negative battery terminal and a surrounding wall that confines a cell receiving space and a prong receiving space. A prong unit including a prong base disposed slidably in the prong receiving space, a pair of prongs connected at one end to the prong base, and a slide button extending through a longitudinal slot in the surrounding wall of the battery housing and connected to the prong base. The slide button is operable manually to move the prongs selectively between a first position, wherein the prongs are fully retracted in the prong receiving space, and a second position, wherein the prongs extend out of the prong receiving space via prong holes at the top end of the battery housing for connection to an electrical outlet.

These publications typify the prior art in this area which addresses the problem of how to remove the integral prongs after recharging is complete so that the device may once again be used as a battery.

According to a first aspect of the present invention there is provided an integral battery and recharger comprising a battery housing, battery terminals and plug pins for location in a plug socket and operable to effect recharging of the battery when connected to an AC supply, the battery housing being generally designed to be received in a close fitting cavity of a battery powered device, wherein the part of the housing from which the plug pins project is designed to be sufficiently spaced, in use, from the walls of the said cavity to allow the

plug pins which project therefrom to fully extend in the space provided between the said part and the said cavity.

The housing may be shaped so as to be securely locatable
5 in the cavity in a manner which is independent of the pins. Alternatively, the ends of the pins may extend, in use, as far as the cavity and contribute to the stability of the unit in the cavity.

10 Preferably, the ends of the pins provide two point, more preferably, three point stabilising contact, in use, with the cavity without causing, or preferably, allowing the battery to be moved out of position within the cavity.

15 Preferably, the plug pins project outwardly from a side of the housing and, preferably, are fixed in the same position with respect to the housing during recharging and during use of the battery in a battery powered device.

20 Preferably, the battery is designed for location in a generally four-sided cross-section elongate cavity, preferably, a rectangular cross-section with bevelled angles.

25 The prior art battery housing for such prior art cavities would commonly also be a generally rectangular, bevelled angled, cross-section elongate battery housing for close fitting engagement with the battery cavity. However, in a preferred embodiment of the invention a corner of such a
30 prior art housing would be cut-away to provide a generally flat face, preferably, longitudinally parallel with the

remaining sides of the housing, preferably, disposed approximately 45° thereto. The plug pins may be fitted to project outwardly from this face of the housing and the depth of imaginary cut-off of the corner is that required
5 for the pins to fully extend, in use as a battery, without projecting beyond the cavity walls.

Preferably, therefore, the housing has three sides in end section.

10

In preferred embodiments, the corners between sides of the housing are bevelled.

The bevelled edges are, preferably, of sufficient radius
15 and arc length to stabilise the three-sided housing against rotation in a four sided cavity.

Preferably, the plug pins project outwardly perpendicular from the cavity spaced face of the housing.

20

Preferably, the battery housing has a top face from which at least one, preferably two, battery terminal(s) project(s) and a bottom face from which battery terminals may also project.

25

The pins may be of a three pin or two pin construction. Preferably, the positive and negative pins abut, in use, adjacent sides of the cavity respectively to thereby provide additional rotational and lateral stability for
30 the battery within the cavity.

When used, the earth pin, preferably, extends towards and may abut, in use, a corner of the cavity between adjacent sides thereof. In such a manner the earth pin may also provide additional rotational and lateral stability for
5 the battery in the cavity.

Preferably, two adjacent sides of the battery housing extend substantially at right angles to each other. Preferably, the side from which the pins project extends
10 at substantially 45° with respect to the said adjacent sides to form the third side of a three sided battery housing, preferably, suitable for location in a four sided cavity of a battery powered device, preferably, in such a manner that there is sufficient space between the cavity
15 spaced side and the cavity walls to allow two-pin or three pin plug pins to fully extend therefrom without extending beyond the walls of the cavity.

According to a second aspect of the present invention
20 there is provided a battery powered device comprising a battery cavity for receiving a battery housing and a battery located in the said cavity, the battery being according to the first aspect of the present invention. Preferably, the cavity is an elongate rectilinear
25 construction to accommodate the said battery, preferably, the cavity is four sided. Preferably, the angles between the sides of the cavity are bevelled.

The second aspect of the invention may incorporate any one
30 or more of the preferred features of the first aspect of

the invention except where such features are mutually exclusive.

Advantageously, the battery design is such as to minimise
5 loss of battery housing volume whilst maintaining rotational lateral and rocking stability for the battery within the battery cavity. A further advantage is the use of the pin ends to further stabilise the battery in the same manner. A still further advantage is provided during
10 recharging because the pins project from the side of the battery housing as opposed to the ends of an elongate battery and the battery housing is thus more compact with respect to the wall and socket, preventing inadvertent dislodgement of the battery or failure to be able to
15 utilise the battery in limited space locations.

The interior of the battery itself is, typically, of a common construction and is adapted to be interchangeable with a conventional dry cell battery comprising a housing
20 containing therein storage cell means, charging means connected to said storage cell means and socket pins connecting, in use, said charging means to a power source socket.

25 Preferably, the pins are fixed and permanently extend from the said side of the device.

According to a third aspect of the present invention there is provided a method of using and recharging a battery
30 located in a battery powered device comprising the steps of:-

using the said battery powered device in battery powered mode;

removing the battery having integral plug pins projecting therefrom from the battery powered device;

- 5 and plugging the said plug pins into a power source socket for recharging the said battery wherein the position of the plug pins are continuously fixed in the same position with respect to the battery housing during the aforementioned steps.

10

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which:-

- 15 Figure 1 shows a perspective view of a battery in accordance with the present invention;

Figure 2 shows a side elevation of the battery of figure 1;

- Figure 3 shows a rear elevation of the battery of figure 1;

- 20 Figure 4 shows an underplan view of the battery of figure 1;

Figure 5 shows a plan view of the battery of figure 1; and Figure 6 shows a suitable circuitry for recharging.

25

- Referring to figures 1-5, a battery housing 2 comprises two perpendicular adjacent elongate sides 4, 6; a third side 8 extending at 45° to the said adjacent sides 4, 6; bevelled edges 10-14 between each adjacent sides 4, 6 and 8; a top plate 16; and a bottom plate 18. The battery is
- 30 designed to be located in a bevelled angled rectangular

end-section elongate cavity of a battery powered device. The cavity having sides equivalent in width to adjacent sides 4, 6 and of corresponding height to the battery housing 2. The battery housing 2 is located in the
5 rectangular bevelled angled section elongate housing in such a manner that the adjacent sides 4, 6 are located against two adjacent sides of the cavity and the bevelled edges 10, 12, 14 are located against corresponding
10 bevelled angles in the cavity. In this manner, the third side 8 of the housing 2 is substantially spaced from the remaining bevelled angle of the cavity.

A 3 pin plug plate 20 resides in a recessed area 22 formed in the third side 8 of the battery housing 2 in such a
15 manner that the pins of the plate project outwardly therefrom perpendicular to the surface of the third side 8. The plug plate 20 is centrally located in the third side 8 of the battery housing 2 in such a manner that the positive terminal 24 and the negative terminal 26 project
20 outwardly from a height midway between the top and bottom of the side 8 and the earth pin 28 located above the positive and negative pins projects outwardly midway between the side edges of the third plate 8. In use, the cavity spaced side 8 of the housing 2 is sufficiently
25 spaced, in use, from the sides of the cavity to allow each of the pins 24, 26, 28 to fully extend into the space without extending beyond the walls of the cavity. In the embodiment shown, the pins extend as far as the walls of the cavity to provide , in use, three point stabilising
30 contact with the walls of the cavity. Positive and negative pins 24, 26 each abut against adjacent sides of

the cavity respectively and the end of the earth pin 28 abuts against the fourth bevelled edge of the cavity.

The top plate 16 of the battery housing 2 has two spring
5 terminals 30, 32 extending upwardly therefrom corresponding to the positive and negative terminals of the battery. In use as a battery, the unit is located within a bevelled angled rectangular section elongate
10 cavity of a battery powered device (33) and a cap is generally fitted onto the device with corresponding circuit contacts matching the position of the terminals 30, 32 so that battery powered action of the device may take place. The bevelled edges of the battery housing
15 together with the ends of the plug pins provide stable positioning of the battery within the housing. As can be seen from Figure 5, the positive and negative plug pins may abut the walls 31, 35 of the cavity 33 to provide stability and a unique battery locating design.

20 Once the life of the battery has expired, the battery may be removed from the cavity and plugged into a suitable power source wall socket for recharging. After recharging of the device, the unit may once again be used as a battery.

25

The invention thus provides a very convenient integral recharging unit which does not require capping of the pins during use as a battery or folding away or relocation of the pins during battery use. Accordingly, the battery may
30 be immediately used for recharging without the necessity to adjust any components of the battery.

15

20

25

30

Simple recharging circuitry is also defined in US patent no. 4,086,523, figure 5. Referring to figure 6, a suitable two-pin recharging circuit is shown where the negative and positive prongs 2, 4 are connected by suitable contacts 6, 8 and wires 10, 12 to opposite ends 14, 16 of the transformer primary winding 18. A secondary transformer winding 20 is connected with a rectifier 22 to terminal 24 of storage cell 26 and a centre connection 28 is connected from the transformer secondary winding 20 to the terminal 30 of storage cell 26. The other end of the secondary winding 20 is connected with rectifier 32 to storage cell terminal 24. Accordingly in use, an AC current is provided to the transformer primary winding and the transformer reduces the voltage supply to provide a suitable charging voltage to the battery cell via the rectifiers 22, 32 which provide a full wave rectification of the alternating current power supply.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, 5 equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

10 The invention is not restricted to the details of the foregoing embodiment(s). The invention extend to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel 15 combination, of the steps of any method or process so disclosed.

Annex to IPER

13

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CLAIMS

1. An integral battery and recharger comprising a battery housing, battery terminals and plug pins for location
5 in a plug socket and operable to effect recharging of the battery when connected to an AC supply, the battery housing being generally designed to be received in a close fitting four-sided cross-section elongate cavity of a battery powered device, wherein
10 the housing has three sides in end-section and wherein the part of the housing from which the plug pins project is designed to be sufficiently spaced, in use, from the walls of the said cavity to allow the plug pins which project therefrom to fully extend in the
15 space provided between the said part and the said cavity.
2. An integral battery and recharger according to claim 1, wherein the housing is shaped so as to be securely locatable in the cavity in a manner which is
20 independent of the pins.
3. An integral battery and recharger according to claim 1, wherein the ends of the pins extend, in use, as far as the cavity and contribute to the stability of the unit in the cavity.
- 25 4. An integral battery and recharger according to any preceding claim, wherein the ends of the pins provide two point stabilising contact, in use, with the cavity.
5. An integral battery and recharger according to any
30 preceding claim, wherein the plug pins project outwardly from a side of the housing.

6. An integral battery and recharger according to any preceding claim, wherein the plug pins are fixed in the same position with respect to the housing during recharging and during use of the battery in a battery powered device.
7. An integral battery and recharger according to claim 7, wherein the cavity has a rectangular cross-section with bevelled angles.
8. An integral battery and recharger according to any preceding claim, wherein the plug pins project outwardly perpendicular from the cavity spaced face of the housing.
9. An integral battery and recharger according to any preceding claim, wherein the positive and negative pins abut, in use, adjacent sides of the cavity respectively to thereby provide additional rotational and lateral stability for the battery within the cavity.
10. An integral battery and recharger according to any preceding claim, wherein two adjacent sides of the battery housing extend substantially at right angles to each other.
11. An integral battery and recharger according to claim 12, wherein the side from which the pins project extends at substantially 45° with respect to the said adjacent sides to form the third side of a three sided battery housing.
12. A battery powered device comprising a battery cavity for receiving a battery housing and a battery located in the said cavity, the battery being according to any of claims 1-13.

13. A method of using and recharging a battery located in a battery powered device comprising the steps of using the said battery powered device in battery powered mode;
- 5 removing the battery having integral plug pins projecting therefrom from the battery powered device; and plugging the said plug pins into a power source socket for recharging the said battery wherein the position of the plug pins are continuously fixed in
- 10 the same position with respect to the battery housing during the aforementioned steps.
14. A battery and recharger as hereinbefore described with reference to the accompanying drawings.
15. A method of using and recharging a battery as
- 15 hereinbefore described.

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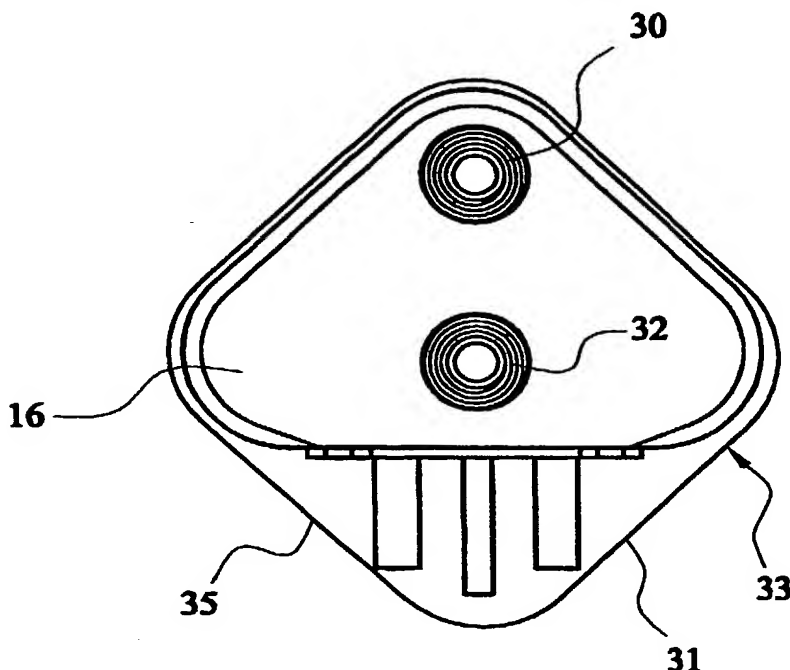
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[Continued on next page]

(54) Title: AN INTEGRAL BATTERY AND RECHARGER



(57) Abstract: An integral battery and recharger is described. The battery includes a battery housing, battery terminals and plug pins for location in a plug socket and operable to effect recharging of the battery when connected to an AC supply. The battery housing is generally designed to be received in a close fitting cavity (33) of a battery powered device. The part of the housing from which the plug pins project is designed to be sufficiently spaced, in use, from the walls of the cavity to allow the plug pins which project therefrom to fully extend in the space provided between the part and the cavity. Preferably, the side from which the pins project extends at substantially 45° with respect to the said adjacent sides to form the third side of a three sided battery housing. A method of using and recharging a battery located in a battery powered device is also described.

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Inventor: Bryan INSLEY.
 Attorney Docket No.: 31229-177731
 Title: AN INTEGRAL BATTERY
 AND RECHARGER
 Page 1 of 4

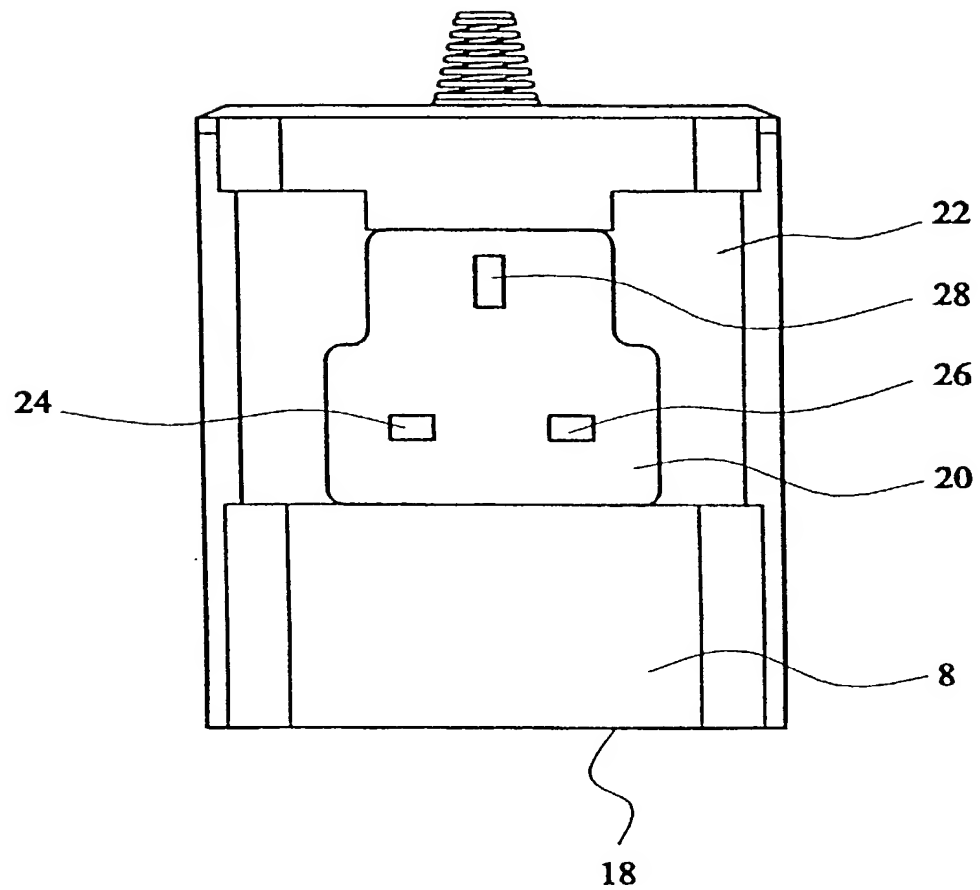


FIG. 1

Inventor: Bryan INSLEY
 Attorney Docket No.: 31229-177731
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 AND RECHARGER
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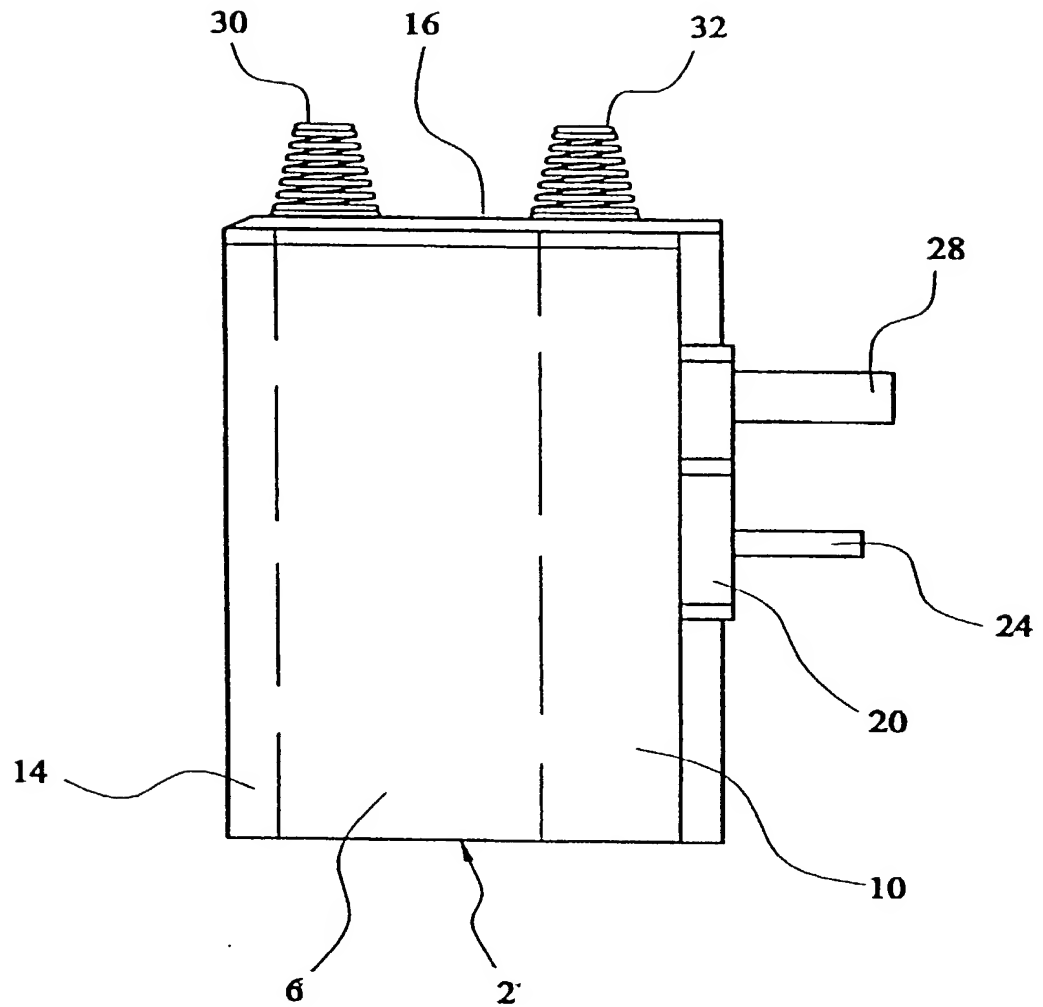


FIG. 2

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 Attorney Docket No.: 31229-177731
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 AND RECHARGER
 Page 3 of 4

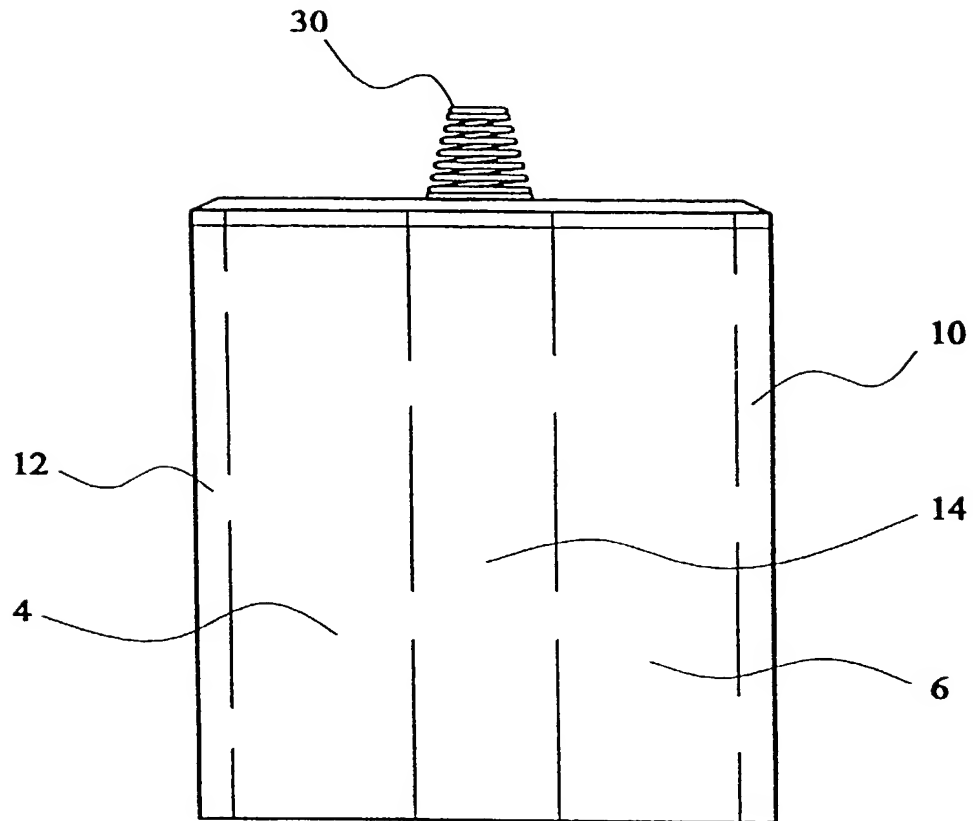


FIG. 3

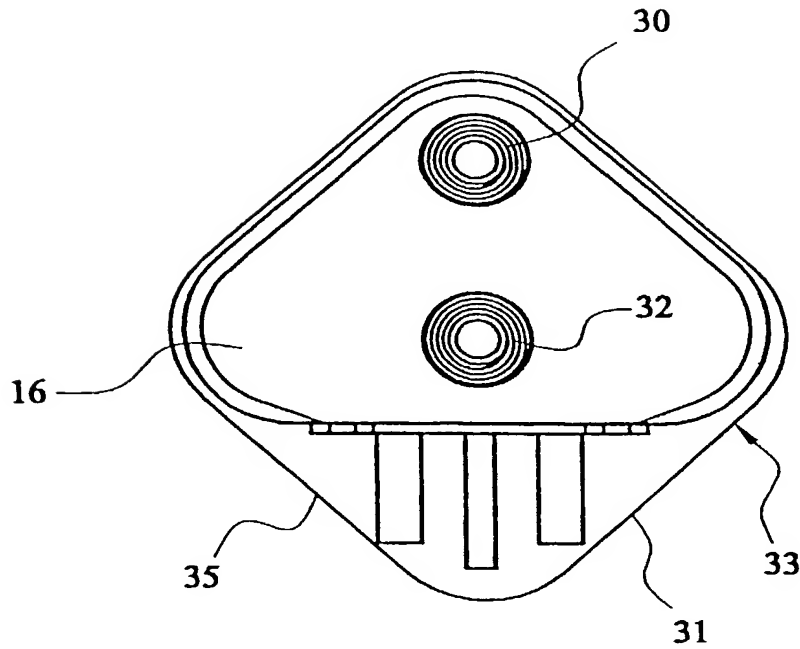


FIG. 5

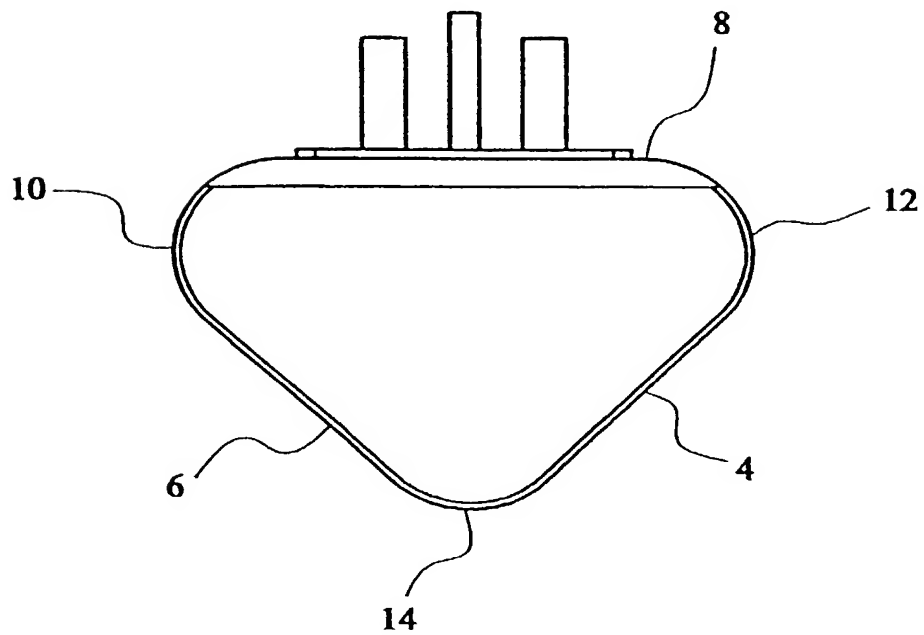


FIG. 4

DECLARATION FOR UNITED STATES PATENT APPLICATION
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS

Attorney Docket
31229-17731

Page 1 of 2

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled AN INTEGRAL BATTERY AND RECHARGER, the specification of which

[] is attached hereto.

[] was filed on _____, as Application Serial No. _____, and was amended on _____ [if applicable].

[X] was filed under the Patent Cooperation Treaty on July 7, 2000 Serial No. PCT/GB00/02608 the United States of America being designated, and was amended on _____ [if applicable].

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, 1.56.

I HEREBY CLAIM foreign priority benefits under Title 35, United States Code §119(a)-(d) of §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number	Country	Foreign Filing Date	Priority Claimed
9917337.9	United Kingdom	July 24, 1999	YES

I HEREBY CLAIM the benefit under Title 35, United States Code §119(e) of any United States provisional application(s) listed below.

U.S. Provisional Application Number	Filing Date

I HEREBY CLAIM the benefit under Title 35, United States Code, §120 of any United States application(s), or §365(c) of any PCT International application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

U.S. Patent Application Number	PCT Patent Application Number	Patent Filing Date	Parent Patent Number

DECLARATION FOR UNITED STATES PATENT APPLICATION
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS

I hereby appoint the registered attorneys and agents of VENABLE associated with the following customer number to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:



VENABLE is located at Suite 1000, 1201 New York Avenue, N.W., Washington, D.C. 20005-3917, Telephone: (202) 962-4800, Telefax: (202) 962-8300. Address all correspondence to VENABLE, Post Office Box 34385, Washington, D.C. 20043-9998.

The undersigned hereby authorizes the registered U.S. attorneys and agents identified herein to accept and follow instructions from the undersigned's assignee, if any, and/or, if the undersigned is not a resident of the United States, the undersigned's domestic attorney, patent attorney or patent agent, as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between U.S. attorneys and the undersigned. In the event of a change in the person(s) from whom instructions may be taken, the registered U.S. attorneys and agents identified herein will be so notified by the undersigned.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signature: X *BC Insley*

Date: X 25.2., 2002.

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